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A synopsis of the expanded *Rhaphiolepis* (Maleae, Rosaceae)

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Abstract

As part of the integrative systematic studies on the tribe Maleae, a synopsis of the expanded *Rhaphiolepis* is presented, recognizing 45 species. Three new forms were validated: *R. bengalensis* f. *contracta* B.B.Liu & J.Wen, *R. bengalensis* f. *intermedia* B.B.Liu & J.Wen, and *R. bengalensis* f. *multinervata* B.B.Liu & J.Wen, and four new combinations are made here: *R. bengalensis* f. *angustifolia* (Cardot) B.B.Liu & J.Wen, *R. bengalensis* f. *gigantea* (J.E.Vidal) B.B.Liu & J.Wen, *R. laoshanica* (W.B.Liao, Q.Fan & S.F.Chen) B.B.Liu & J.Wen, and *R. latifolia* (Hook.f.) B.B.Liu & J.Wen. Furthermore, one new name, *Rhaphiolepis yui* B.B.Liu & J.Wen is proposed here, and three taxa were reduced as new synonyms. We also provide lectotypification for 13 names: *Crataegus bibas*, *Eriobotrya philippinensis*, *Mespilus spiralis*, *Opa integerrima*, *Photinia luzonensis*, *Rhaphiolepis brevipetiolata*, *R. ferruginea* var. *serrata*, *R. fragrans*, *R. gracilis*, *R. hainanensis*, *R. kerrii*, *R. indica* subsp. *umbellata* var. *liukiuensis*, and *R. parvibracteolata*.

Keywords

Eriobotrya, lectotype, new name, nomenclature, taxonomy, typification, validation

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Introduction

The three-subfamily classification system of Rosaceae, Amygdaloideae, Dryadoideae, and Rosoideae, has been accepted and stabilized with a series of molecular phylogenetic studies (Morgan et al. 1994; Potter et al. 2007; Xiang et al. 2017; Zhang et al. 2017). As one of the nine tribes in Amygdaloideae, the apple tribe Maleae consists of ca. 1000 species widely distributed throughout the Northern Hemisphere (Phipps et al. 1990). Some members in Maleae have shown great economic importance, especially as fruits, e.g. apples (*Malus domestica* (Suckow) Borkh.), pears (*Pyrus communis* L.), and loquats (*Rhaphiolepis bibas* (Lour.) Galasso & Banfi), as well as some ornamentals, e.g. chokeberries (*Aronia* Medik.), cotoneasters (*Cotoneaster* Medik.), firethorns (*Pyracantha* M.Roem.), hawthorns (*Crataegus* L.), photinias (*Photinia* Lindl.), rowans (*Sorbus* L.), and serviceberries (*Amelanchier* Medik.). Members of Maleae, therefore, have attracted the attention of many horticulturists, pomologists, and taxonomists.

A recent phylogenomic analysis of *Rhaphiolepis* Lindl. and *Eriobotrya* Lindl. in the framework of Maleae (Rosaceae) strongly supported the paraphyly of *Eriobotrya*, with *Rhaphiolepis* nested within it (Liu et al. 2020b). These two genera were thus considered to be congeneric and treated as *Rhaphiolepis*, which has the nomenclatural priority. The expanded *Rhaphiolepis* has two synapomorphies: the proportionally large seed with rounded or wide-elliptic cross-section and the absence of endosperm (Aldasoro et al. 2005; Liu et al. 2020b). Furthermore, frequent hybridizations may have occurred in the diversification of the expanded *Rhaphiolepis*, which may explain some of the reported topological incongruences between nuclear and chloroplast DNA data within the genus (Liu et al. 2020b). Hybridization events have been reported in several lineages of the apple tribe, such as *Micromeles* Decne., *Pseudocydonia* (C.K.Schneid.) C.K.Schneid. (Lo and Donoghue 2012), and *Phippsiomeles* B.B.Liu & J.Wen (Liu et al. 2019), as well as the *Amelanchier-Malacomeles* (Decne.) Decne.-*Peraphyllum* Nutt. clade (Liu et al. 2020a). It is also very common in many lineages of angiosperms, e.g. Gesneriaceae (Kleinkopf et al. 2019), Magnoliaceae (Wang et al. 2020), Vitaceae (Wen et al. 2018, 2020), and Wightiaceae (Xia et al. 2019).

Most of the species of the expanded *Rhaphiolepis* are trees and shrubs, distributed from subtropical East Asia to tropical Southeast Asia. The loquat species (*Rhaphiolepis bibas* = *Eriobotrya japonica* (Thunb.) Lindl.) belongs to this genus, and has been widely cultivated all over the world as fruits and ornamentals. Furthermore, several other species, such as *Rhaphiolepis indica* (L.) Lindl. and *R. umbellata* (Thunb.) Makino have been used as ornamentals with their abundant white flowers and persistent red fruits. Thunberg (1784) described the first species, i.e. the loquat, as *Mespilus japonica* Thunb., and since then nearly 242 names have been published in the last two centuries. Previous studies were primarily regional in scope along with floristic treatments, e.g., Flora of British India (Hooker 1878), Flora of Japan (Ohwi 1965), Flore du Cambodge, du Laos et du Vietnam (Vidal 1968), Flora of Thailand (Vidal 1970), Flora of Taiwan (Ohashi 1993), and Flora of China (Kuan and Yu 1974; Gu and Spongberg 2003). While these names have never been well evaluated comprehensively, and some of them

have been largely neglected since their description, such as *Rhaphiolepis crataegoides* M.Roem. and *R. laevis* Lodd. ex G.Don. Liu et al. (2020c) provided typifications for 23 names related to *Eriobotrya*. We herein evaluate all names published previously and provide a genus-wide synopsis of *Rhaphiolepis*, while the horticultural cultivars will not be in the scope of this study, such as *Eriobotrya japonica* f. *variegata* and × *Rhaphiobotrya* 'Coppertone' (Coombes and Robertson 2008). We hope the taxonomic framework presented here will stimulate in-depth evolutionary studies of this widely distributed Asian lineage of Maleae using collections-based tools (Wen et al. 2017; Funk 2018).

Materials and methods

We reviewed all names published previously, by checking all available online resources, such as Tropicos (2020: https://www.tropicos.org), IPNI (2020: https://www.ipni.org/), and the Plant List (2013: http://www.theplantlist.org/), furthermore, all the regional floras (e.g. Hooker 1878; Ohwi 1965; Vidal 1968, 1970; Ohashi 1993; Gu and Spongberg 2003) and related original literature of each taxon. We have followed the most recent taxonomic treatments in the regional floras, such as Flora of China (Gu and Spongberg 2003) and Flore du Cambodge, du Laos et du Vietnam (Vidal 1968), and the unresolved names were recognized temporarily herein. The rules governing the holotype and lectotype followed McNeill (2014), Turland et al. (2018), and Turland (2019). Thanks to the rapid digitization of plant specimens around the world, we checked the type specimens via JSTOR (2020) or personal communications with the herbaria. A total of 184 images of type specimens have been evaluated, and these specimens are from the following herbaria, A, B, BM, C, E, HBG, K, L, M, MO, MSC, NY, P, TCD, U, UPS, CNMN, and WU. We also visited some herbaria in China and USA for the type material, CDBI, HITBC, IBK, IBSC, KUN, PE, SN, SYS, SZ, US, and WUK. The herbarium code followed Index Herbariorum (2020).

Taxonomy

***Rhaphiolepis* Lindl. in Bot. Reg.: ad t. 468. 1 Jul 1820 ('*Raphiolepis*') (nom. & orth. cons.).**
Chinese name: 石斑木属

= *Eriobotrya* Lindl., Trans. Linn. Soc. London 13: 96, 102. 1821. Type: *Eriobotrya japonica* (Thunb.) Lindl. ≡ *Mespilus japonica* Thunb. (= *Rhaphiolepis bibas* (Lour.) Galasso & Banfi).
= *Opa* Lour., Fl. Cochinch.: 304, 308. Sep 1790. Type (vide McVaugh 1956): *Opa metrosideros* Lour. (= *Rhaphiolepis indica* (L.) Lindl.).
=× *Rhaphiobotrya* Coombes, Plantsman n.s., 7(3): 164. 2008 (*Eriobotrya* Lindl. × *Rhaphiolepis* Lindl.).

Type. *Rhaphiolepis indica* (L.) Lindl.≡*Crataegus indica* L.

Description. ***Trees, small trees, or shrubs***, 40–100[–200] dm. ***Stems*** ca. 1, erect; bark gray-brown; short shoots absent; unarmed; hairy. ***Leaves*** persistent, cauline, simple; stipules deciduous or ± persistent, free, on the extreme base of petiole, rarely intrapetiolarly connate, subulate, caducous, or subulate, small, margin entire; petiole present; blade ± elliptic to oblong-lanceolate, 2–40 cm, leathery, margins flat or reflex, serrate, dentate or entire, venation penninerved (craspedodromous or camptodromous). ***Inflorescences*** in terminal racemes, panicles, or compound racemes, many-flowered. ***Pedicels*** present, short, or nearly absent. ***Flowers*:** perianth and androecium epigynous, 15–20 mm diam.; hypanthium campanulate, cupular, tubular, or obconical, the free part inside lined with an intrastaminal disk, open at the top; sepals 5, persistent or caducous; petals 5, white, yellow, or pink, obovate or orbicular, base clawed; stamens 15–20(-40); ovary inferior, carpels 2–5, ventrally and laterally connate (in upper part ventrally free), or completely connate with each other and dorsally adnate to the hypanthium, the hairy apex exposed; ovules normally 2 per carpel, rarely more; styles 2–5, connate at base and often pubescent; stigma truncate. ***Fruits*** a pome, yellowish, yellowish red, brown, dark purplish-brown, bluish, or purplish-black, subglobose, globose, or obovate, fleshy or dry, flesh mostly of hypanthial origin, sclereids absent or present, endocarp (core) thin, membranous. ***Seeds*** 1–3, large, with a thin but firm testa; endosperm absent, cotyledons thick. $2n = 34$.

About 45 species (Vidal 1965, 1968, 1970; Kalkman 1973, 2004; Gu and Spongberg 2003) in East & Southeast Asia and the Himalayas, south to Borneo and Sumatra.

1. *Rhaphiolepis angustissima* (Hook.f.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.

Chinese name: 条叶枇杷

≡ *Eriobotrya angustissima* Hook.f., Fl. Brit. India [J. D. Hooker] 2(5): 372. 1878. Type: India. Khasia. alt. 5000 ft., without date, *J.D. Hooker & T. Thomson s.n.* (lectotype, designated by Vidal 1965, pg. 574: K [barcode K000758406]! "type"; isolectotype: BM [barcode BM000602192]!, "isotype").

≡ *Pyrus angustissima* (Hook.f.) M.F.Fay & Christenh., Global Fl. 4: 95. 2018. Type: Based on *Eriobotrya angustissima*.

Distribution. India (Mt. Khasia) and Vietnam.

2. *Rhaphiolepis balgooyi* (K.M.Wong & Ent) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.

Chinese name: 基纳巴卢枇杷

≡ *Eriobotrya balgooyi* K.M.Wong & Ent, Pl. Ecol. Evol. 147(1): 136. 2014. Type. Malaysia. Sabah, Ranau District, Bukit Babi [Pig Hill] on the south-east side of

Mount Kinabalu, 6°03'N, 116°36'E, 2000–2300 m, 25 May 1984, *J.H. Beaman et al. 9871* (holotype: K [barcode K000618095]!; isotype: MSC).

Distribution. Malaysia (Borneo on Mt. Kinabalu and Mt. Tambuyukon).

3. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.

Chinese name: 南亚枇杷

≡ *Mespilus bengalensis* Roxb., Fl. Ind. (ed. 1832) 2: 510. 1832. Type: India. 1824, *N. Wallich 668.2* (neotype, designated by Vidal 1965, pg. 567: K [barcode K001111550]!, "lectotype"; isoneotype: P [barcode P02143255]!), "isolectotype". cf. note in Liu et al. 2020c, pg. 113).

≡ *Eriobotrya bengalensis* Hook.f., Fl. Brit. India [J. D. Hooker] 2(5): 371. 1878. Type: Based on *Mespilus bengalensis*.

3a. *Rhaphiolepis bengalensis* f. *bengalensis*

Chinese name: 南亚枇杷(原变型)

= *Alsodeia grandis* Miq., Fl. Ned. Ind., Eerste Bijv. 3: 391. 1861. Type: Indonesia. "Sumatra orient. in regionibus interioribus prov. Palembang, prope Muara-enim", *s.coll. HB4023* (holotype: U [barcode U0005827]!).

= *Eriobotrya tinctoria* Kurz, Prelim. Rep. For. Veg. Pegu, App. B. 48. 1875, in clavi. Type: not designated.

Distribution. widely distributed from East Himalaya (Sikkim and Assam) through Bangladesh (Chittagong) to Myanmar, Laos, Cambodia, Vietnam, Malay Peninsula, Sumatra, and Borneo.

3b. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *angustifolia* (Cardot) B.B.Liu & J.Wen, comb. nov.

urn:lsid:ipni.org:names:77210691-1

Chinese name: 窄叶南亚枇杷

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. var. *angustifolia* Cardot, Notul. Syst. (Paris) 3: 371. 1918. Type: China. Yunnan: Hay-y près Lou-Lan, Pau Ngueou, 29 March 1907, *F. Ducloux 4719* (lectotype, designated by Liu et al. 2020c, pg. 103: P [barcode P02143256]!; isolectotype: P [barcode P02143257]!).

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *angustifolia* (Cardot) J.E.Vidal, Adansonia, n.s. 5: 569. 1965. Type: Based on *Eriobotrya bengalensis* var. *angustifolia*.

Distribution. China (Yunnan).

3c. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *contracta* B.B.Liu & J.Wen, f. nov.

urn:lsid:ipni.org:names:77210693-1
Chinese name: 聚花南亚枇杷

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *contracta* J.E.Vidal, Adansonia, n.s. 5: 569. 1965, *nom. inval.* Type: Vietnam. Annam: sommet du Nui Bach Ma, Station d'altitude un peu au Sud de Huê Alt. 1400–1500 m, Le 6 September 1938, *E. Poilane 27620* (holotype: P [barcode P03650248]!, isotype: P [barcode P03650249]!). Annam: Nui Bach Ma Station d'altitude de Huê 1400–1500 m, d'alt. Lé 12 December 1940, *E. Poilane 31104* (paratypes: P [barcode P03650258, P03650259]!). Bachma (Centre-Vietnam), 23 August 1943, *J.E. Vidal 36* (paratype: P [barcode P03650257]!). Annam: Col des nuages près Tourane Forêt 900 m, d'altitude Le 14 September 1923, *E. Poilane 7986* (paratypes: P [barcode P03650251, P03650253]!). Prov. Quang Nam: *E. Poilane 11* (syntype). Annam: Massif du Ngok Guga près de Dakto prov. du Kontum Le 25 February 1946, alt. 1000 m, *E. Poilane 35584* (paratypes: P [barcode P03650240, P03650241)!). S. Annam: massif du Hon Ba, 31 August 1918, *A. Chevalier 38718* (paratype: P [barcode P03650239]!). Sud. Annam: Prov. Nha Trang: Massif du Hon Ba, 1000–1100 m alt., 4 September 1918, *A. Chevalier 38832* (paratypes: P [barcode P03650246, P03650247]!). Prov. Nha Trang: Massif du Hon Ba, 1000–1500 m alt., 4 September 1918, *A. Chevalier 38892* (paratypes: P [barcode P03650233, P03650238, P03650245]). [Note A]

Distribution. Vietnam.

Note A. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *contracta* B.B.Liu & J.Wen, f. nov.** Vidal (1965) cited nine collections as syntypes in the protologue, but he did not indicate a single type. *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *multinervata* J.E.Vidal was thus invalidly published (Art. 40.1: Turland et al. 2018). We validated *Rhaphiolepis bengalensis* f. *multinervata* as a new form by reference to designating one duplicate (P03650248) of the first collections cited by Vidal (1965) as the holotype, and the diagnosis followed Vidal (1965).

3d. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *gigantea* (J.E.Vidal) B.B.Liu & J.Wen, comb. nov.

urn:lsid:ipni.org:names:77210695-1
Chinese name: 大叶南亚枇杷

** A forma typica differt inflorescentiis contractis, multo brevioribus (Vidal 1965).

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *gigantea* J.E.Vidal, Adansonia, n.s. 5: 569. 1965. Type: Myanmar. *Parkinson 314* (holotype: K)

Distribution. Myanmar.

3e. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *intermedia* B.B.Liu & J.Wen, f. nov.
urn:lsid:ipni.org:names:77210697-1
Chinese name: 四柱南亚枇杷

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *intermedia* J.E.Vidal, Adansonia, n.s. 5: 568. 1965, *nom. inval.* Type: Myanmar. "In thicket on the western flank of the N'Maikha-Salween divide, east of Hpimaw. Lat. 26°N, alt. 10000 feet. East Upper Burmah", April 1919, *G. Forrest 17845* (holotype: E [barcode E00072976]!; isotypes: E [barcode E00072977]!, K). Région de Huê, "Bachma, Centre Vietnam, 1200 m", 21 January 1944, *J.E. Vidal 35A* (paratype: P [barcode P03650235]!); "Km. 13, Route de Bachma, Centre Vietnam, 1200 m", 12 March 1944, *J.E. Vidal 35B* (paratype: P [barcode P03650234]!); "Km. 12.5 Route de Bachma Centre Vietnam", 6 April 1944, *J.E. Vidal 35C* (paratype: P [barcode P03650231]!). [Note B]

Diagnosis. A forma typica differt stylis 4 frequentioribus (Vidal 1965).

Distribution. Myanmar.

Note B. Four gatherings were cited in the protologue by Vidal (1965), but none of them was not designated as type. *Eriobotrya bengalensis* f. *intermedia* was thus invalidly published (Art. 40.1: Turland et al. 2018) despite the lectotypification designated by Liu et al. (2020c) for this name. We validated *Rhaphiolepis bengalensis* f. *intermedia* as a new form by reference to designating one duplicate (E00072976) of the first gathering cited by Vidal (1965) as the holotype, and the diagnosis followed Vidal (1965).

3f. *Rhaphiolepis bengalensis* (Roxb.) B.B.Liu & J.Wen f. *multinervata* B.B.Liu & J.Wen, f. nov.
urn:lsid:ipni.org:names:77210699-1
Chinese name: 多脉南亚枇杷

≡ *Eriobotrya bengalensis* (Roxb.) Hook.f. f. *multinervata* J.E.Vidal, Adansonia, n.s. 5: 569. 1965, *nom. inval.* Type: Thailand. Siam, Chiang Mai, Doi Angka (now as Doi Inthanon), ca. 1400 m, 16 July 1922, *A.F.G. Kerr 6293* (holotype: P [barcode P03650228]!). Siam: Doi Pa Kao, ca. 1200 m, 7 May 1921, *A.F.G. Kerr 5372* (paratype: P [barcode P03650229]!). 1964, *B. Hansen et al. 10797* (paratypes: C, P [barcode P03650232]!). Siam. Kanchanaburi: Si Sawat, ca. 600 m, 17 January 1926, *A.F.G. Kerr 10235* (paratypes: K, P [barcode P03650230]!). [Note C]

Distribution. Thailand.

Diagnosis. A forma typica differt lamina venis utrinque 15–20 (Vidal 1965).

Note C. *Eriobotrya bengalensis* f. *multinervata* was invalidly published (Art. 40.1: Turland et al. 2018), because four gatherings were cited in the protologue by Vidal (1965), *A.F.G. Kerr 6293*, *A.F.G. Kerr 5372*, *A.F.G. Kerr 10235*, and *B. Hansen et al. 10797*. We herein validated *Rhaphiolepis bengalensis* f. *multinervata* as a new form by reference to designating *A.F.G. Kerr 6293* (P03650228) as the holotype which was in a better condition, and the diagnosis followed Vidal (1965).

4. *Rhaphiolepis bibas* (Lour.) Galasso & Banfi, Ital. Botanist 9: 66. 2020.

Chinese name: 枇杷

≡ *Crataegus bibas* Lour., Fl. Cochinch. 1: 319. 1790. Type: Plukenet, L. 1705. *Amaltheum botanicum* pag. 26. tab. 371. fig. 2. (**lectotype, designated here**). [Note D]

≡ *Pyrus bibas* (Lour.) M.F.Fay & Christenh., Global Fl. 4: 98. 2018. Type: Based on *Crataegus bibas*.

= *Mespilus japonica* Thunb., Fl. Jap. (Thunberg) 206. 1784. Type: Japan. *Thunberg* s.n. (holotype: UPS-THUNB accession no. 11908).

≡ *Eriobotrya japonica* (Thunb.) Lindl., Trans. Linn. Soc. London 13: 102. 1821. Type: Based on *Mespilus japonica*.

≡ *Photinia japonica* (Thunb.) Benth. & Hook.f. ex Asch. & Schweinf., Mém. Inst. Égypt. [Illustr. Fl. Egypt.]. Type: Based on *Mespilus japonica*.

≡ *Rhaphiolepis loquata* B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020. nom. illeg. Type: Based on *Mespilus japonica*.

Distribution. Native in Chongqing (Nanchuan) and Hubei (Yichang) of China. As an economically important fruit, this species has been widely cultivated in central & south China, as well as in Japan, Korea, India, and some countries in Southeast Asia.

Note D. Loureiro (1790) described *Crataegus bibas* Lour. in his "Flora Cochinchinensis" and cited one illustration (Fig. 1) published in Plukenet's book "Amaltheum botanicum" in the protologue. This is because Loureiro had his collections of specimens that may contain (or may have contained) specimens of this species. This illustration is thus designated as the lectotype of *C. bibas* herein.

5. *Rhaphiolepis brevipetiolata* J.E.Vidal, Fl. Cambodge, Laos & Vietnam Fasc. 6, 88. 1968, in adnot.

Chinese name: 短柄石斑木

Type. Vietnam. "Prov. de Khanh Hoa (Nha Trang): région de Nha Trang, 1600 m", 19 May 1922, *E. Poilane 3464* (**lectotype, designated here**: P [barcode P03206033]; isolectotype: P [barcode P03206032]). [Note E]

Distribution. Vietnam (Nha Trang).

Figure 1. Lectotype of *Crataegus bibas*.

Note E. Vidal (1968) described *Rhaphiolepis brevipetiolata* and cited the collection *E. Poilane 3464* deposited in herbarium P as type in the protologue, however, we found two duplicates in the herbarium P. A lectotype is needed to be chosen from these two duplicates (Turland et al. 2018: Art. 9.15). We herein designated the sheet (P03206033) that was annotated by Vidal as the lectotype. Furthermore, this species has never been well treated since its publication. Although we herein recognized this species, a further study will be needed to clarify the identity of *R. brevipetiolata*.

6. *Rhaphiolepis cavaleriei* (H.Lév.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.

Chinese name: 大花枇杷

≡ *Hiptage cavaleriei* H.Lév., Repert. Spec. Nov. Regni Veg. 10: 372. 15 March 1912. Type: China. Kouy-Tcheou (Guizhou): Pin-fa, montagne en pente, 20 May 1907, *J. Cavalerie 3220* (lectotype, designated by Liu et al. 2020c, pg. 112: E [barcode E00011330]!; isolectotypes: A [barcode 00055347]!, E [barcode E00284669]!, K [barcode K000758387]!, P [barcode P02143258, P02143259]!).

≡ *Eriobotrya cavaleriei* (H.Lév.) Rehder, J. Arnold Arbor. 13: 307. 1932. Type: Based on *Hiptage cavaleriei*.

≡ *Pyrus athenae* M.F.Fay & Christenh., Global Fl. 4: 96. 2018. Type: Based on *Hiptage cavaleriei*.

= *Eriobotrya grandiflora* Rehder & E.H.Wilson, Pl. Wilson. (Sargent) 1(2): 193. 30 April 1912. Type: China. Western Szech'uan (Sichuan): alt. 1600m, May 1904, *E.H. Wilson 3506* (lectotype, designated by Liu et al. 2020c, pg. 107: A [barcode 00026472]!; isolectotypes: A [barcode 00026473]!, BM [barcode BM000602187]!, HBG [barcode HBG511040]!, K [barcode K000758386]!, P [barcode P02143267]!).

≡ *Eriobotrya deflexa* (Hemsl.) Nakai var. *grandiflora* (Rehder & E.H.Wilson) Nakai, J. Arnold Arbor. 5(2): 72. 1924. Type: Based on *Eriobotrya grandiflora*.

= *Eriobotrya brackloi* Hand.-Mazz., Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 59: 102. 1922. Type: China. Kwangtung (Guangdong): In silva ad austro-occid. jugi Tsatmukngao prope oppidum Lienping ad bor.-or. urbis Kanton sita ad rivos, 800 m, substr. crystallino, 15, 27 July 1920, *R.E. Mell 659* (lectotype, designated by Liu et al. 2020c, pg. 104: WU [barcode WU0059394]!; isolectotype: A [barcode 00026469]!).

≡ *Eriobotrya cavaleriei* (H.Lév.) Rehder var. *brackloi* (Hand.-Mazz.) Rehder, J. Arnold Arbor. 13(3): 308. 1932. Type: Based on *Eriobotrya brackloi*.

= *Eriobotrya brackloi* Hand.-Mazz. var. *atrichophylla* Hand.-Mazz., Anz. Akad. Wiss. Wien, Math.-Naturwiss. Kl. 59: 103. 1922. Type: China. Hunan: austro-occ.: In monte Yün-scha prope urbem Wukang, in silva elata frondosa umbrosa. alt. 950 m, 6 June 1918, *H.F. von Handel-Mazzetti 12032* (lectotype, designated by Liu et al. 2020c, pg. 104: WU [barcode WU0059395]!; isolectotype: A [barcode 00026471]!).

Distribution. China (Fujian, Guangdong, Guangxi, Guizhou, Hubei, Hunan, Jiangxi, and Sichuan) and North Vietnam (Hòa Bình and Lao Cai).

7. *Rhaphiolepis condaoensis* (X.F.Gao, Idrees & T.V.Do) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 昆岛枇杷

≡ *Eriobotrya condaoensis* X.F.Gao, Idrees & T.V.Do, Phytotaxa 365(3): 290. 2018. Type: Vietnam. Ba Ria-Vung Tau Province: Con Dao National Park, growing on the slope of hill under tropical evergreen forest, 20m, 8°41'30"N, 106°38'00"E, 21 March 2017, *T.V.Do VNMN_CN 633* (holotype: VNMN!; isotype: CDBI!).

Distribution. Southeast Vietnam (Ba Ria-Vung Tau: Con Dao National Park).

8. *Rhaphiolepis* × *daduheensis* (H.Z.Zhang ex W.B.Liao, Q.Fan & M.Y.Ding) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 大渡河枇杷

≡ *Eriobotrya* × *daduheensis* H.Z.Zhang ex W.B.Liao, Q.Fan & M.Y.Ding, Phytotaxa 212(1): 97. 2015. Type. China. Sichuan: Hanyuan County, Dashu Town, Xinmin Village, Mt. Shizishan, in the forest edge at the foot of the mountain, 970 m, 29°17'48.18"N, 102°39'44.94"E, 19 December 2007, *Q. Fan 9292* (holotype: SYS [barcode 190936]!; isotypes: SYS!, IBSC!).

Distribution. As a putative natural hybrid between *Rhaphiolepis bibas* (=*Eriobotrya japonica*) and *R. prinoides* (=*E. prinoides*), this species is restricted to Daduhe River Basin in Sichuan, China (Ding et al. 2015).

9. *Rhaphiolepis deflexa* (Hemsl.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 台湾枇杷

≡ *Photinia deflexa* Hemsl., Ann. Bot. 9: 153. 1895. Type: China. Formosa (Taiwan): Bankinsing, May 1894, *A. Henry 498* (lectotype, designated by Vidal 1965, pg. 566: K [barcode K000758389]! "type"; isolectotype: A [barcode 00026740]!, "isotype").
≡ *Eriobotrya deflexa* (Hemsl.) Nakai, Bot. Mag. (Tokyo) 30: 18, in adnot. 1916. Type: Based on *Photinia deflexa.*
= *Photinia buisanensis* Hayata, Icon. Pl. Formosan. 3: 100. 1913. Type: not designated.
≡ *Eriobotrya deflexa* (Hemsl.) Nakai f. *buisanensis* (Hayata) Nakai, Bot. Mag. (Tokyo) 30(349): 18. 1916. Type: Based on *Photinia buisanensis.*

≡ *Eriobotrya buisanensis* (Hayata) Kaneh., Formosan Trees 218. 1918. Type: Based on *Photinia buisanensis*.
≡ *Eriobotrya deflexa* Nakai var. *buisanensis* (Hayata) Hayata, Catal. Governm. Herb. Formos. 246. 1930. Type: Based on *Photinia buisanensis*.
≡ *Eriobotrya buisanensis* (Hayata) Makino & Nemoto, Fl. Japan., ed. 2 (Makino & Nemoto) 464. 1931. Type: Based on *Photinia buisanensis*.
= *Eriobotrya deflexa* Nakai var. *koshunensis* Kaneh. & Sasaki, Catal. Gov't Herb. Formosa 246. 1930. Type: not designated.
≡ *Eriobotrya deflexa* Nakai f. *koshunensis* (Kaneh. & Sasaki) H.L.Li, Lloydia 14(4): 232. 1951. Type: Based on *Eriobotrya deflexa* var. *koshunensis*.

Distribution. China (Guangdong, Hainan, and Taiwan) and Vietnam (Nha Trang).

10. *Rhaphiolepis dubia* (Lindl.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 喜马拉雅枇杷

≡ *Photinia dubia* Lindl., Trans. Linn. Soc. London 13(1): 104, t. 10. 1821. Type: Nepal. *N. Wallich 668.1* (neotype, designated by Liu et al. 2020c, pg. 113: K [barcode K001111549]!; isoneotypes: BM [barcode BM000521995]!, E [barcode E00011335]!).
≡ *Eriobotrya dubia* (Lindl.) Decne., in Nouv. Arch. Mus. Hist. Nat. Ser. I, x. 145. 1874. Type: Based on *Photinia dubia*.
= *Mespilus tinctoria* D.Don, Prodr. Fl. Nepal. 238. 1825. Type: not designated.

Distribution. Bhutan, India (Sikkim), Myanmar (Kachin, Mandalay, and Shan), and Nepal.

11. *Rhaphiolepis elliptica* (Lindl.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 椭圆枇杷

≡ *Eriobotrya elliptica* Lindl., Trans. Linn. Soc. London 13(1): 102. 1821. Type: Nepal. Narainhetty. 1 February 1803, *F. Buchanan-Hamilton s.n.* (holotype: BM [barcode BM000521994]!).
≡ *Cotoneaster ellipticus* (Lindl.) Loudon, Encyc. Pl. 1208. 1841. Type: Based on *Eriobotrya elliptica*.
≡ *Pyrus elliptica* (Lindl.) M.F.Fay & Christenh., Global Fl. 4: 102. 2018. Type: Based on *Eriobotrya elliptica*.

11a. *Rhaphiolepis elliptica* var. *elliptica*
Chinese name: 椭圆枇杷(原变种)

= *Mespilus cuila* Buch.-Ham. ex D.Don, Prodr. Fl. Nepal. 238. 1825, nom. nov. superfl. Type: Based on *Eriobotrya elliptica* Lindl.

Distribution. China (Tibet) and Nepal (Narainhetty).

11b. *Rhaphiolepis elliptica* (Lindl.) B.B.Liu & J.Wen var. *petelotii* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 老街椭圆枇杷

≡ *Eriobotrya elliptica* Lindl. var. *petelotii* J.E.Vidal, Adansonia sér. 2, 5: 552. 1965. Type: Vietnam. "prov. de Lao Kay, Chapa, 1500 m", January 1929, *M. Pételot s.n.* (lectotype, designated by Liu et al. 2020c, pg. 105: P [barcode P02143261]!; isolectotype: P [barcode P02143262]!).

Distribution. N Vietnam (Lao Cai).

12. *Rhaphiolepis ferruginea* F.P.Metcalf, Lingnan Sci. J. 18: 509. 1939, "*Raphiolepis*".
Chinese name: 锈毛石斑木

≡ *Pyrus sodomacea* M.F.Fay & Christenh., Global Fl. 4: 121. 2018. Type: China. Guangdong: Tapu District, Tung Koo Shan, 8–29 September 1932, *W.T. Tsang 21587* (holotype: A [barcode 00032516]!; isotypes: K [barcode K000758194]!, P [barcode P02143130]!).

12a. *Rhaphiolepis ferruginea* var. *ferruginea*
Chinese name: 锈毛石斑木(原变种)

Distribution. China (Fujian, Guangdong, Guangxi, and Hainan).

12b. *Rhaphiolepis ferruginea* F.P.Metcalf var. *serrata* F.P.Metcalf, Lingnan Sci. J. 18: 511. 1939, "*Raphiolepis*".
Chinese name: 齿叶锈毛石斑木

Type. China. Guangdong: Lung-tau Mt., near Iu Village, May 22-July 5, 1924, *To & Tsang 12546* (**lectotype, designated here**: A [barcode 00032518]!; isolectotype: A [barcode 00032517, 00032519]!). [Note F]

Distribution. China (Fujian, Guangdong, and Guangxi).

Note F. *To & Tsang 12546* was designated as the type in the protologue. We located three specimens in herbarium A, therefore, they are syntypes. A subsequent lectotypification is necessary. We designated the sheet (A00032518) in a better condition as the lectotype herein.

13. *Rhaphiolepis fulvicoma* (Chun ex W.B.Liao, F.F.Li & D.F.Cui) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 10. 2020.
Chinese name: 薄叶枇杷

≡ *Eriobotrya fulvicoma* Chun ex W.B.Liao, F.F.Li & D.F.Cui, Ann. Bot. Fenn. 49(4): 264. 2012. Type: China. Guangdong: Xinyi County, Dawuling Natural Reserve, 45 m, 28 April 1932, *Z. Huang 32257* (holotype: WUK [barcode 0109531]!; isotypes: IBK [barcode IBK00060958, IBK00060976]!, IBSC [barcode 0298975]!, KUN [barcode 0116268]!, PE [barcode 00799336]!, SZ [barcode 00194329]!).

Distribution. China (Guangdong).

14. *Rhaphiolepis glabrescens* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 无毛枇杷

≡ *Eriobotrya glabrescens* J.E.Vidal, Adansonia sér. 2, 5: 554. 1965. Type: Myanmar. Kachin State: "N. Birmanie, Triangle, Hkinlum village, 2500 m, en fleurs", 4 April 1953, *F. Kingdon-Ward 20616* (lectotype, designated by Liu et al. 2020c, pg. 106: BM [barcode BM000602189]; isolectotypes: A [barcode 00026482]!, E [barcode E00011336]!).
≡ *Pyrus serpentae* M.F.Fay & Christenh., Global Fl. 4: 121. 2018. Type: Based on *Eriobotrya glabrescens*.

14a. *Rhaphiolepis glabrescens* var. *glabrescens*
Chinese name: 无毛枇杷(原变种)

Distribution. North Myanmar (Triangle, Centre Ouest, and Khai Yang).

14b. *Rhaphiolepis glabrescens* (J.E.Vidal) B.B.Liu & J.Wen var. *victoriensis* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 钝齿无毛枇杷

≡ *Eriobotrya glabrescens* J.E.Vidal var. *victoriensis* J.E.Vidal, Adansonia sér. 2, 5: 555. 1965. Type: Myanmar. KachinState: "Birmanie centrale, Mt Victoria, 3000 m, en fleurs", 2 April 1956, *F. Kingdon-Ward 21915* (holotype: BM [barcode BM000602190]!).

Distribution. North Myanmar (Centre Ouest: Mt Victoria).

15. *Rhaphiolepis henryi* (Nakai) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 窄叶枇杷

≡ *Eriobotrya henryi* Nakai, J. Arnold Arbor. 5: 70. 1924. Type: China. Yunnan: Szemao (Simao), 1900, *A. Henry 13018* (lectotype, selected by Vidal 1965, pg. 562, first step "type"; second step, designated by Liu et al. 2020c, pg. 107: A [barcode 00026474]!; isolectotypes: K [barcode K000758388]!, NY [barcode 00436209]!).
≡ *Pyrus henryi* (Nakai) M.F.Fay & Christenh., Global Fl. 4:106. 2018. Type: Based on *Eriobotrya henryi*.

Distribution. China (Guizhou and Yunnan) and Myanmar (Pyin Oo Lwin).

16. *Rhaphiolepis hookeriana* (Decne.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 锡金枇杷

≡ *Eriobotrya hookeriana* Decne., Nouv. Arch. Mus. Hist. Nat. Ser. I 10:146. 1874. Type: India. Sikkim: Jongri, 13000–15000 ft., 10 August 1862, *T. Anderson 490* (lectotype, designated by Vidal 1965, pg. 563: P [barcode P02143268]!, "type"; isolectotype: GH [barcode 00026483]!, "isotype").
≡ *Pyrus hookeriana* (Decne.) M.F.Fay & Christenh., Global Fl. 4: 107. 2018. Type: Based on *Eriobotrya hookeriana*.

Distribution. Bhutan and India (Sikkim).

17. *Rhaphiolepis indica* (L.) Lindl., Bot. Reg. 6: t. 468. 1820.
Chinese name: 石斑木

≡ *Crataegus indica* L., Sp. Pl. 1: 477. 1753. Type: India. *s.coll. s.n.* (lectotype, designated by Vidal 1968, pg. 85: LINN [barcode LINN-HL643-11]! "type"). [Note G]

Note G. Vidal (1968) provided the lectotype for *Crataegus indica*, while he wrote it as type. Jarvis (2007) confirmed this typification and corrected it as lectotype.

17a. *Rhaphiolepis indica* var. *indica*
Chinese name: 石斑木(原变种)

= *Crataegus rubra* Lour., Fl. Cochinch. 1: 320. 1790. Type: China. Guangdong: "Habitat agrestis prope Cantone Sinarum", *J. Loureiro 320-3* (holotype: P [barcode P00150873]!).
≡ *Mespilus rubra* (Lour.) Stokes, Bot. Mat. Med. iii. 110. 1812. Type: Based on *Crataegus rubra*.
≡ *Rhaphiolepis rubra* (Lour.) Lindl., Coll. Bot. (Lindley) t. 3. 1821. Type: Based on *Crataegus rubra*.
= *Mespilus sinensis* Poir., Encyc. [J. Lamarck & al.] Suppl. 4. 70. 1816. Type: not designated.
≡ *Crataegus sinensis* (Poir.) Loisel., Herb. Amat. iv. t. 247. 1820. Type: Based on *Mespilus sinensis*.
≡ *Rhaphiolepis sinensis* (Poir.) M.Roem., Syn. Rosifl. 3: 114. 1847. Based on *Mespilus sinensis*.
= *Opa metrosideros* Lour., Fl. Cochinch. 1: 309. 1790. Type: "Cochinchina", *J. Loureiro s.n.* (holotype: BM [barcode BM000906022]!).
≡ *Syzygium metrosideros* (Lour.) DC., Prodr. [A. P. de Candolle] 3: 261. 1828. Type: Based on *Opa metrosideros*.
≡ *Eriobotrya metrosideros* (Lour.) A.Chev., Cat. Pl. Jard. Bot. Saigon 64. 1919. Type: Based on *Opa metrosideros*.
= *Rhaphiolepis crataegoides* M.Roem., Syn. Rosifl. 113. 1847. Type: not designated.
≡ *Rhaphiolepis indica* (L.) Lindl. var. *crataegoides* (M.Roem.) Nakai, J. Arnold Arbor. 5: 66. 1924. syn. nov. Type: Based on *Rhaphiolepis crataegoides*.
= *Rhaphiolepis fragrans* E.T.Geddes, Bull. Misc. Inform. Kew 1929(4): 108. 1929, "*Raphiolepis*". Type: Thailand. Kemarat, Ubon, Kan Kak, 100 m, 30 January 1924, *A.F.G. Kerr 8257A* (**lectotype, designated here:** K [barcode K000758246]!; isolectotypes: BM [barcode BM000602125]!, C [barcode C10017919]!, E [barcode E00011337]!). Siam: 100 m, January 1924, *A.F.G. Kerr 8257* (paratype: TCD [barcode TCD0016617]!) [Note H]
= *Rhaphiolepis gracilis* Nakai, J. Arnold Arbor. 5: 64. 1924. Type: China. Zhejiang: S. Yentang, 600 ft (ca. 183 m), August 26, 1920, *H.H. Hu 228* (**lectotype, designated here:** A [barcode 00032521]!). ibidem, 10 ft, August 24, 1920, *H.H. Hu 220* (syntype: A [barcode 00032520]!). [Note I]
= *Rhaphiolepis indica* (L.) Lindl. var. *latifolia* Cardot, Notul. Syst. (Paris) 3: 380. 1918. Type: not designated.
= *Rhaphiolepis indica* (L.) Lindl. var. *mekongensis* Cardot, Notul. Syst. (Paris) 3: 380. 1918. Type: Laos. "Bassin du Mékong: rivière Selamphao", 1876, *Harmand 202* (holotype: A [barcode 00032551]!).
≡ *Rhaphiolepis mekongensis* (Cardot) Tagane & H.Toyama, Acta Phytotax. Geobot. 66(2): 127. 2015. Type: Based on *Rhaphiolepis indica* var. *mekongensis*.

≡ *Pyrus mekongensis* (Cardot) M.F.Fay & Christenh., Global Fl. 4: 112. 2018. Type: Based on *Rhaphiolepis indica* var. *mekongensis*.

= *Rhaphiolepis kerrii* E.T.Geddes, Bull. Misc. Inform. Kew 4: 109. 1929, "*Raphiolepis*". Type: Thailand. Siam: "Kao Krading, 1200 m", 12 March 1924, *A.F.G. Kerr 8689* (**lectotype, designated here:** K [barcode K000758247]!; isolectotypes: BK (barcode BK257293)!, BM (barcode BM000602126)!). [Note J]

= *Rhaphiolepis loureiroi* Spreng., Syst. Veg., ed. 16 [Sprengel] 2: 508. 1825. Type: not designated.

= *Rhaphiolepis parvibracteolata* Merr., Philipp. J. Sci. 21: 344. 1922. Type: China. Hainan: Nodoa, roadside in wilderness, 250 m, 2 January 1922, *F.A. McClure 8015* (**lectotype, designated here:** US [barcode 00097487]!; isolectotypes: A [barcode 00032548, 00032549]!, NY [barcode 00415903]!). [Note K]

= *Rhaphiolepis rubra* (Lour.) Lindl. var. *foliosa* Nakai, J. Arnold Arbor. 5: 66. 1924. syn. nov. Type: not designated.

= *Rhaphiolepis rubra* (Lour.) Lindl. var. *lanceolata* Nakai, J. Arnold Arbor. 5: 67. 1924. syn. nov. Type: not designated.

= *Rhaphiolepis rugosa* Nakai, J. Arnold Arbor. 5: 62. 1924. Type: China. Jiangxi: Anfu County, Woo Kung Shan, 3500 ft, 20 April 1921, *H.H. Hu 711* (holotype: A [barcode 00032550]!).

Distribution. Cambodia, China, Indonesia, Japan, Laos, Thailand, and Vietnam.

Note H. Geddes (1929) described *Rhaphiolepis fragrans* and designated "*Kerr 8257A*" as the type. However, we located four sheets in four different herbaria (BM, C, E, K), all of which represent duplicates from a homogeneous collection. A lectotype is needed to be chosen from these four duplicates (Turland et al. 2018: Art. 9.15). We designated the duplicate in K (K000758246) in a better condition as the lectotype herein. It should be noted that Geddes (1930) described another name, *Pyrus fragrans* E.T.Geddes (in Bull. Misc. Inform. Kew 4: 161. 1930) with the same epithet.

Note I. Nakai (1924) described *Rhaphiolepis gracilis* and designated two collections as type, therefore, they are syntypes and a lectotype is necessary to be chosen from them (Art. 9.12: Turland et al. 2018). We designated the collection, *H.H. Hu 228* (A00032521) as the lectotype, as it is deposited in a better condition.

Note J. Geddes (1929) designated "*Kerr 8689*" as the type in his work "Contributions to the flora of Siam. Additamentum XXVI". We found three sheets of this collection in herbaria BK, BM, and K. According to Art. 9.15 (Turland et al. 2018), it is necessary for us to choose one of these three specimens as lectotype. We lectotypified the duplicate in K (K000758247) for *Rhaphiolepis kerrii*, as it was preserved in a better condition.

Note K. Merrill (1922) described *Rhaphiolepis parvibracteolata* and designated the collection, *F.A. McClure 8015*, as the type. However, we located four sheets in herbaria A, NY, and US, from which the lectotype could be chosen. As the duplicate deposited in the herbarium US (00097487) has the identification tag of ".....Rhaphiolepis parvibracteolata Merr. n. sp. ..... IDENTIFIED BY E. D. MERRILL .....", we herein designated this sheet as the lectotype.

17b. *Rhaphiolepis indica* (L.) Lindl. var. *phaeostemon* (Lindl.) Nakai, J. Arnold Arbor. 5: 65–66. 1924.
Chinese name: 长丝石斑木

≡ *Rhaphiolepis phaeostemon* Lindl., Coll. Bot. (Lindley) sub t. 3. 1821. Type. Not designated.

Distribution. China.

17c. *Rhaphiolepis indica* (L.) Lindl. var. *shilanensis* Yuen P.Yang & H.Y.Liu, Taiwania 47(2): 176. 2002.
Chinese name: 恒春石斑木

Type. China. Taiwan: Pingtung County, Nanjenshan, October 25, 1978, *K.S. Hsu & Y.P. Yang s.n.* (holotype: TAIF).

Distribution. China (Taiwan).

17d. *Rhaphiolepis indica* (L.) Lindl. var. *spiralis* (Blume) Nakai, J. Arnold Arbor. 4: 65. 1924.
Chinese name: 爪哇石斑木

≡ *Mespilus spiralis* Blume, Bijdr. Fl. Ned. Ind. 17: 1102, 1826. Type: Indonesia. Java: *C.L. Blume s.n.* (**lectotype, designated here:** L [barcode L0019710]!; isolectotypes: L [barcode L0019711, L0019712, L0019713]!, NY [barcode 00436082]!). [Note L]
≡ *Rhaphiolepis spiralis* (Blume) G.Don, Gen. Hist. 2: 602. 1832. Type: Based on *Mespilus spiralis*.
≡ *Crataegus spiralis* (Blume) Steud., Nomencl. Bot. [Steudel], ed. 2. i. 434. 1841. Type: Based on *Mespilus spiralis*.
≡ *Opa spiralis* (Blume) Seem., J. Bot. 1: 281. 1863. Type: Based on *Mespilus spiralis*.

Distribution. Indonesia (Java).

Note L. Blume (1826) described *Mespilus spiralis* in his book "Bijdragen tot de flora van Nederlandsch Indië", noting that the original material on which it was based was collected from a plant introduced from China in Java. We found five sheets representing the duplicates from one collection, four of them from herbarium L and one of them from herbarium NY. It will be necessary for us to choose one of them as the lectotype. According to Stafleu and Cowan (1976), Blume's original collections were deposited at L, second set at BO, and type mainly at L, but also at BO and P. One of the four duplicates deposited at L, therefore, will be a candidate for the lectotype. We designated the sheet (L0019710) in a better condition as the lectotype.

17e. *Rhaphiolepis indica* (L.) Lindl. var. *tashiroi* Hayata ex Matsum. & Hayata, J. Coll. Sci. Imp. Univ. Tokyo 22: 129. 1906.
Chinese name: 毛序石斑木

Type. Not designated.
Distribution. China (Taiwan).

17f. *Rhaphiolepis indica* (L.) Lindl. f. *impressivena* (Masam.) S.S.Ying, Coloured Illustr. Fl. Taiwan 1: 371. 1985.
Chinese name: 清水山石斑木

≡ *Rhaphiolepis impressivena* Masam., Trans. Nat. Hist. Soc. Formosa 30: 340. 1940. Type: China. Taiwan: "In rocky place between 1000–1200 m, Mt. Seisui-zan (Chingshui), Karengun, April 8, 1939", *T. Nakamura 365* (holotype: TI).

Distribution. China (Taiwan).

17g. *Rhaphiolepis indica* (L.) Lindl. f. *minor* (Makino) H.Ohashi, J. Jap. Bot. 63(1): 6. 1988.
Chinese name: 紧序石斑木

≡ *Rhaphiolepis umbellata* (Thunb.) Makino var. *minor* Makino, Bot. Mag. (Tokyo) 16: 14. 1902. Type: Japan. Prov. Mushashi: Tokyo, Bot. Gard. Koishikawa, cult. 19 May 1880, *T. Makino s.n.* (syntype: TI); 20 May 1890, T. Makino s.n. (syntype: TI); May 1896, *T. Makino s.n.* (syntype: TI).
≡ *Rhaphiolepis minor* (Makino) Koidz., Bot. Mag. (Tokyo) 23: 171. 1909. Type: Based on *Rhaphiolepis umbellata* var. *minor*.
≡ *Rhaphiolepis rubra* (Lour.) Lindl. var. *minor* (Makino) Nakai, J. Arnold Arbor. 5: 67. 1924. Type: Based on *Rhaphiolepis umbellata* var. *minor*.
≡ *Rhaphiolepis indica* (L.) Lindl. var. *minor* (Makino) Kitam., Acta Phytotax. Geobot. 26(1–2): 2. 1974. Type: Based on *Rhaphiolepis umbellata* var. *minor*.

Distribution. Japan (Tokyo).

18. *Rhaphiolepis integerrima* Hook. & Arn., Bot. Beechey Voy. 263. 1838.
Chinese name: 全缘石斑木

≡ *Opa integerrima* (Hook. & Arn.) Seem., J. Bot. 1: 281. 1863. Type: Japan. "Bonin [in] Loa Choo", *Beechey s.n.* (**lectotype, designated here:** K [barcode K000758198]!; isolectotypes: K [barcode K000758197, K000758199, K000758200]!).
≡ *Rhaphiolepis japonica* Siebold & Zucc. var. *integerrima* (Hook. & Arn.) Hook.f., Bot. Mag. 91: pl. 5510. 1865. Type: Based on *Opa integerrima*.

≡ *Rhaphiolepis integerrima* (Hook. & Arn.) Hort., ex Handl. Trees Kew Pt. i. [Polypet.] 217. 1894. Type: Based on *Opa integerrima*.
≡ *Rhaphiolepis umbellata* (Thunb.) Makino f. *integerrima* Rehder, Mitt. Deutsch. Dendrol. Ges. 24: 223. 1915. Type: Based on *Opa integerrima*.
≡ *Rhaphiolepis umbellata* (Thunb.) Makino var. *integerrima* (Hook. & Arn.) Masam., Sci. Rep. Kanazawa Univ. 3: 3. 1955. Type: Based on *Opa integerrima*.
≡ *Pyrus godiva* M.F.Fay & Christenh., Global Fl. 4: 105. 2018. Type: Based on *Opa integerrima*.
= *Rhaphiolepis mertensii* Siebold & Zucc., Fl. Jap. (Siebold) 1: 164. 1841. Type: not designated.
≡*Opa mertensii* (Siebold & Zucc.) Seem., J. Bot. 1: 281. 1863. Type: Based on *Rhaphiolepis mertensii*.
≡ *Rhaphiolepis umbellata* (Thunb.) Makino var. *mertensii* (Siebold & Zucc.) Makino, Bot. Mag. (Tokyo), 16(179): 14. 1902. Type: Based on *Rhaphiolepis mertensii*.
≡ *Rhaphiolepis integerrima* Hook. & Arn. var. *mertensii* (Siebold & Zucc.) Makino ex Koidz., J. Coll. Sci. Imp. Univ. Tokyo 34(2): 72. 1913. Type: Based on *Rhaphiolepis mertensii*.

Distribution. China (Taiwan) and Japan (Ryukyu Islands).

19. *Rhaphiolepis jiulongjiangensis* P.C.Huang & K.M.Li, J. Nanjing Forest. Univ. 13(4): 85. fig. IA, 1989, as '*Raphiolepis*'.
Chinese name: 九龙江石斑木

≡ *Pyrus jiulongjiangensis* (P.C.Huang & K.M.Li) M.F.Fay & Christenh., Global Fl. :4: 108. 2018. Type. China. Fujian: Hua'an County, Jiulongjiang, 120 m, April 1987, *K.M. Li 30439* (holotype: NJF).

Distribution. China (Fujian).

20. *Rhaphiolepis lanceolata* Hu, J. Arnold Arbor. 13: 335. 1932.
Chinese name: 细叶石斑木

≡ *Pyrus lanceolata* (Hu) M.F.Fay & Christenh., Global Fl. 4: 110. 2018. Type: China. Guangxi: "Seh-feng Dar-shan, S. Nanning, alt. 775 m", 21 Oct. 1928, *R.C. Ching 8060* (holotype: A [barcode 00032543]!; isotypes: A [barcode 00032544, 00032545]!, NY [barcode 00415902]!).
= *Rhaphiolepis hainanensis* F.P.Metcalf, Lingnan Sci. J. 18: 511. 1939. "*Raphiolepis*" Type: China. Hainan: Po-ting, 1300 ft, September 25, 1935, *F.C. How 73712* (**lectotype, designated here:** A [barcode 00032523]!). Dung Ka to Wen Fa Shi, 1700 ft, March 3, 1932, *N.K. Chun & C.L. Tso 43670* (syntypes: A [barcode

00032522]!, P [barcode P02143129]!). Yaichow, July 9, 1933, *H.Y. Liang 61989* (paratype). [Note M]

= *Rhaphiolepis indica* (L.) Lindl. var. *angustifolia* Cardot, Notul. Syst. (Paris) 3: 380. 1918. Type: Vietnam. "province de Quant-tri, vallée de haute rivière de Cu-Bi", *Eberhardt 2057* (holotype: P; isotypes: A [barcode 00032540]!).

Distribution. China (Guangdong?, Guangxi, and Hainan).

Note M. In the protologue of *Rhaphiolepis hainanensis*, two specimens was designated as types, they are *N.K. Chun & C.L. Tso 43670* as "type flower", and *F.C. How 73712* as "type fruit", which are therefore syntypes. Metcalf also cited the specimens *H.Y. Liang 61989* but without designating it as a type; it is, therefore, a paratype. It is necessary to choose one specimen as the lectotype from the two types; we, therefore, designated the "type fruit" specimen "*F.C. How 73712*" in a better condition as the lectotype herein.

21. *Rhaphiolepis laoshanica* (W.B.Liao, Q.Fan & S.F.Chen) B.B.Liu & J.Wen, comb. nov.

urn:lsid:ipni.org:names:77210700-1

Chinese name: 老山枇杷

≡ *Eriobotrya laoshanica* W.B.Liao, Q.Fan & S.F.Chen, PhytoKeys 146: 64 (2020). Type: China. Yunnan: Malipo County, Mount Laoshan, in thin forests on the slopes of limestone hills, 22°59.08'N, 104°50.48'E, 1160 m a.s.l., 14 October 2019, *Q. Fan 17570* (holotype: SYS; isotypes: IBSC, SYS).

Distribution. China (Yunnan).

22. *Rhaphiolepis latifolia* (Hook.f.) B.B.Liu & J.Wen, comb. nov. [Note N]

urn:lsid:ipni.org:names:77210701-1

Chinese name: 宽叶枇杷

≡ *Eriobotrya latifolia* Hook.f., Fl. Brit. India [J. D. Hooker] 2(5): 370. 1878. Type: Myanmar. Moalmayne, on Thoung Gyne, alt. 5000 ft., 1857, *T. Lobb s.n.* (holotype: K [barcode K000758400]!).

≡ *Pyrus herae* M.F.Fay & Christenh., Global Fl. 4: 106. 2018. Type: Based on *Eriobotrya latifolia*.

≡ *Rhaphiolepis herae* (M.F.Fay & Christenh.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020. Type: Based on *Eriobotrya latifolia*.

Distribution. Myanmar (Kayin and Taninthayi).

Note N. *Rhaphiolepis latifolia* Lodd. ex G.Don (in Hort. Brit. [Loudon] 202. 1830) was a naked name because this name has been published without descriptive statements in the protologue (Turland et al. 2018: Art. 38.1). *Rhaphiolepis latifolia* has

thus not been occupied. Although Liu et al. (2020b) made a new combination for this name as *R. herae* (M.F.Fay & Christenh.) B.B.Liu & J.Wen, the correct name of this taxon should be *R. latifolia*. We need to make another new combination as *Rhaphiolepis latifolia* (Hook.f.) B.B.Liu & J.Wen herein.

23. *Rhaphiolepis longifolia* (Decne.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 长叶枇杷

≡ *Photinia longifolia* Decne., Nouv. Arch. Mus. Hist. Nat. Ser. I 10: 142. 1874. Type: Bangladesh. East Bengal. Mishmi Hills, *W. Griffith 2093* (lectotype, designated by Liu et al. 2020c, pg. 113: P [barcode P02143220]!; isolectotype: K [barcode K000758398]!).
≡ *Eriobotrya longifolia* (Decne.) Hook.f., Fl. Brit. India [J. D. Hooker] 2(5): 370. 1878. Type: Based on *Photinia longifolia*.

Distribution. Bangladesh (East Bengal).

24. *Rhaphiolepis macrocarpa* (Kurz) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 大果枇杷

≡ *Eriobotrya macrocarpa* Kurz, J. Asiat. Soc. Bengal, Pt. 2, Nat. Hist. 41(4): 306. 1872. Type: not designated.

Distribution. Myanmar (Bago and Mandalay).

25. *Rhaphiolepis major* Cardot, Notul. Syst. (Paris) 3: 380. 1918.
Chinese name: 大叶石斑木

≡ *Pyrus major* (Cardot) M.F.Fay & Christenh., Global Fl. 4: 111. 2018. Type: China. Fujian: Wuyishan County, Kuantun (Guadun Village), April 1898, *M. de Latouche s.n.* (holotype: P [barcode P02143132]!; isotypes: A [barcode 00032547]!, K [barcode K000758196]!, P [barcode P02143133, P02143134]!)
= *Rhaphiolepis indica* (L.) Lindl. var. *grandifolia* Franch., Bull. Soc. Bot. France 46: 207. 1899. Type: not designated.

Distribution. China (Fujian, Jiangsu, Jiangxi, and Zhejiang).

26. *Rhaphiolepis malipoensis* (K.C.Kuan) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 麻栗坡枇杷

≡ *Eriobotrya malipoensis* K.C.Kuan, Acta Phytotax. Sin. 8(3): 231. 1963. Type: China. Yunnan: Malipo County, Hwang-jin-yinn, 1200 m, 21 January 1940, *C.W. Wang et al. 86318* (holotype: PE [barcode 00004573]!; isotypes: IBSC [barcode 0299391]!, KUN [barcode 0116367]!).
≡ *Pyrus malipoensis* (K.C.Kuan) M.F.Fay & Christenh., Global Fl. 4: 111. 2018. Type: Based on *Eriobotrya malipoensis.*

Distribution. China (SE Yunnan).

27. *Rhaphiolepis merguiensis* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 丹老枇杷

≡ *Eriobotrya merguiensis* J.E.Vidal, Adansonia sér. 2, 5: 563. 1965. Type: Myanmar. "Birmanie, Mergui, Mout Myinmolekat, 1200 m, en fruits", 17 January 1930, *R.N. Parker 3098* (holotype: K [barcode K000758399]!).
≡ *Pyrus merguiensis* (J.E.Vidal) M.F.Fay & Christenh., Global Fl. 4: 112. 2018. Type: Based on *Eriobotrya merguiensis.*

Distribution. Myanmar (Mergui Archipelago and Taninthayi).

28. *Rhaphiolepis oblongifolia* (Merr. & Rolfe) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 矩圆叶枇杷

≡ *Eriobotrya oblongifolia* Merr. & Rolfe, Philipp. J. Sci., C 3: 102. 1908. Type: Philippines. Mindanao. Misamis: Mount Malindang, May 1906, *E.A. Mearns & W.J. Hutchinson 4680* (lectotype, designated by Liu et al. 2020c, pg. 108: NY [barcode 00436215]!; isolectotype: US [barcode 00097490]!).

Distribution. Philippines (Mindanao).

29. *Rhaphiolepis obovata* (W.W.Sm.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 倒卵叶枇杷

≡ *Eriobotrya obovata* W.W.Sm., Notes Roy. Bot. Gard. Edinburgh 10: 29. 1917. Type: China. Yunnan: in the vicinity of Yunnanfu, *E.E. Maire 2450* (holotype: E [barcode E00011331]!; isotypes: E [barcode E00284668]!, K [barcode K000758390]!).
≡ *Pyrus obovata* (W.W.Sm.) M.F.Fay & Christenh., Global Fl. 4: 114. 2018. Type: Based on *Eriobotrya obovata*.

Distribution. China (C Yunnan).

30. *Rhaphiolepis petiolata* (Hook.f.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 长柄枇杷

≡ *Eriobotrya petiolata* Hook.f., Fl. Brit. India [J. D. Hooker] 2(5): 370. 1878. Type: Sikkim, 9000 ft, *J.D. Hooker s.n.* (lectotype, designated by Liu et al. 2020c, pg. 109: K [barcode K000758394]).
≡ *Pyrus petiolata* (Hook.f.) M.F.Fay & Christenh., Global Fl. 4: 115. 2018. Type: Based on *Eriobotrya petiolata*.

Distribution. Bangladesh (Chittagong), Bhutan, India (Khasia and Sikkim), and Myanmar (Chin).

31. *Rhaphiolepis philippinensis* (S.Vidal) Kalkman, Blumea 21(2): 434. 1973.
Chinese name: 菲律宾石斑木

≡ *Eriobotrya philippinensis* S.Vidal, Revis. Pl. Vasc. Filip. 123. 1886. Type: Philippines. Luzon: "Santa Cruz, Pr. Zambales", *S. Vidal 1350* (**lectotype, designated here:** K [barcode K000758204]!, isolectotype: MA [barcode MA729287]!). "Infanta, Pr. Zambales", *S. Vidal 1353* (syntype: K [barcode K000758205]!, MA [barcode MA729288, MA729288-2]!). [Note O]
≡ *Pyrus philippinensis* (S.Vidal) M.F.Fay & Christenh., Global Fl. 4: 115. 2018. Type: Based on *Eriobotrya philippinensis*.
= *Photinia luzonensis* Merr., Publ. Bur. Sci. Gov. Lab. 17: 18. 1904. Type: Philippines. Luzon: Lamao River Mt. Mariveles, Provence of Bataan, Oct. 1903, *E.D. Merrill 3223* (**lectotype**, selected by Kalkman 1973, pg. 434, first step; **second step, designated here:** NY [barcode 00436125]!, isolectotypes: K [barcode K000758209]!, P [barcode P02143221]!). ibidem, January 1, 1904, *E.D. Merrill 3714* (syntypes: BM [barcode BM000602128]!, K [barcode K000758206]!). [Note P]
≡ *Eriobotrya luzonensis* (Merr.) Nakai, J. Arnold Arbor.5: 69. 1924. "luzoniensis". Type: Based on *Photinia luzonensis*.
= *Eriobotrya acuminatissima* Nakai, J. Arnold Arbor. 5: 71. 1924. Type: Philippines. Luzon: Panay Province, mt. Salibongbong Capiz, June 1919, *A. Martelino & G. Edano 35622* (lectotype, designated by Liu et al. 2020c, pg. 101: A [barcode

00026487]!; isolectotypes: BM [barcode BM000602127]!, L [barcode L0019714]!, P [barcode P02143260]).

Distribution. Philippines and Malaysia (Borneo: Sabah).

Note O. Vidal (1886) designated two collections as the type when he described *Eriobotrya philippinensis* in his work "Revision de Plantas Vasculares Filipinas", therefore, they are syntypes (Art. 9.6: Turland et al. 2018). We herein select the flowering specimen (*S. Vidal 1350*) as a candidate for the lectotype, however, two duplicates of this collection were located in herbaria K and MA. We must narrow the lectotype to a single sheet. In the 1870s Vidal took up posts in the forestry service of the Philippines, however, in 1883 he was back in Europe and visited the herbaria there including K (Vidal 1885). Therefore, we herein designate the sheet of *S. Vidal 1350* in K (barcode K000758204) as the lectotype.

Note P. Merrill (1904) described *Photinia luzonensis* and mentioned two collections (*E.D. Merrill 3223 & 3714*) in the protologue, and thus they are syntypes (Art. 9.6: Turland et al. 2018). Kalkman (1973) wrote as "Type: *Merrill 3223* (K, iso); paratype: *Merrill 3714* (BM, K)", which means that he designated *Merrill 3223* as the lectotype [first-step]. We located two duplicates in herbaria NY and K, respectively, and thus it is necessary to narrow the lectotype to one single specimen. According to Stafleu and Cowan (1981), Merrill's type and material are deposited in A, FH, NY, PNH, and UC. We, therefore, designate the sheet in NY (barcode 00436125) as the lectotype [second-step].

32. *Rhaphiolepis platyphylla* (Merr.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.

Chinese name: 克钦枇杷

≡ *Eriobotrya platyphylla* Merr., Brittonia 4(1): 80. 1941. Type: Myanmar. Upper Burma: hills east of Fort Hertz, 8 December 1931, *F. Kingdon-Ward 10205* (lectotype, designated by Liu et al. 2020c, pg. 109: A [barcode 00026485]!; isolectotypes: A [barcode 00026484]!, BM [barcode BM000602191]!).

≡ *Pyrus platyphylla* (Merr.) M.F.Fay & Christenh., Global Fl. 4: 116. 2018. Type: Based on *Eriobotrya platyphylla*.

Distribution. Myanmar (Kachin).

33. *Rhaphiolepis poilanei* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.

Chinese name: 越南枇杷

≡ *Eriobotrya poilanei* J.E.Vidal, Adansonia sér. 2, 5: 557. 1965. Type: Vietnam. Haut Donnai: Annam, Canton de Laouan Délégation de Djiriing, alt. 1200 m, 5 June 1933, *E. Poilane 22591* (lectotype, designated by Liu et al. 2020c, pg.

110: P [barcode P02143226]!; isolectotypes: C [barcode C10017885]!, L [barcode L0019414]!, P [barcode P02143227, P02143228]!).

≡ *Pyrus poilanei* (J.E.Vidal) M.F.Fay & Christenh., Global Fl. 4: 116. 2018. Type: Based on *Eriobotrya poilanei*.

Distribution. Vietnam (Haut-Donnai).

34. *Rhaphiolepis prinoides* (Rehder & E.H.Wilson) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 栎叶枇杷

≡ *Eriobotrya prinoides* Rehder & E.H.Wilson, Pl. Wilson. (Sargent) 1(2): 194. 1912. Type. China. Yunnan: Mengtze (Mengzi), alt. 1500 m, *A. Henry 9878* (lectotype, designated by Liu et al. 2020c, pg. 110: A [barcode 00026476]!; isolectotypes: A [barcode 00026478]!, B [barcode B 10 0295749]!, E [barcode E00011334]!, K [barcode K000758391, excluding the fruiting branch]!, MO [barcode MO-176739]!, NY [barcode 00436210, excluding the fruiting branch, 00436211, 00436212]!, US [barcode 00097491, excluding the fruiting branch]!).

≡ *Pyrus prinoides* (Rehder & E.H.Wilson) M.F.Fay & Christenh., Global Fl. 4: 116. 2018. Type: Based on *Eriobotrya prinoides*.

34a. *Rhaphiolepis prinoides* var. *prinoides*
Chinese name: 栎叶枇杷(原变种)

Distribution. China (Sichuan and Yunnan) and Laos.

34b. *Rhaphiolepis prinoides* (Rehder & E.H.Wilson) B.B.Liu & J.Wen var. *laotica* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 老挝栎叶枇杷

≡ *Eriobotrya prinoides* Rehder & E.H.Wilson var. *laotica* J.E.Vidal, Adansonia sér. 2, 5: 573. 1965. Type. Laos. Xièng Khouang: 1200 m, en fleurs, 3 November 1920, *E. Poilane 2243* (lectotype, designated by Liu et al. 2020c, pg. 110: P [barcode P02143229]!; isolectotypes: P [barcode P02143230, P02143231]!).

Distribution. Laos (Xièng Khouang).

35. *Rhaphiolepis salicifolia* Lindl., Coll. Bot. (Lindley) 1: sub t. 3. 1821.
Chinese name: 柳叶石斑木

≡ *Pyrus gomorrana* M.F.Fay & Christenh., Global Fl. 4: 105. 2018. Type: not designated.
= *Rhaphiolepis cheniana* F.P.Metcalf, Lingnan Sci. J. 18: 509. 1939. "*Raphiolepis*" Type: China. Fujian: Nanputo, Amoy, January 2, 1927, *H.H. Chung 5912* (holotype: A [barcode 00032513]!; isotype: A [barcode 00032514]!).
= *Rhaphiolepis kwangsiensis* Hu, J. Arnold Arbor. 13: 335. 1932. Type: China. Guangxi, Me-Kom, Seh-feng Dar-Shan, S. Nanning, 800m, *R.C. Ching 8360* (holotype: A [barcode 00032541]!, isotype: A [barcode 00032542]!).

Distribution. China (Fujian, Guangdong, and Guangxi) and Vietnam (Quang Tri and Thua Thiên).

36. *Rhaphiolepis salwinensis* (Hand.-Mazz.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 怒江枇杷

≡ *Eriobotrya salwinensis* Hand.-Mazz., Symb. Sin. Pt. 7(3): 475. 1933. Type: China. Yunnan: Im str. Laubwalde des birm. Mons. am Ufer des Salwin um Tschamutong von Sijitong bis unter Tjiontson, Phyllit und kristallinischer Kalk, 1625–1700 m, 13 July & 17 August 1916, *H.F. von Handel-Mazzetti 9573* (lectotype, designated by Liu et al. 2020c, pg. 111: WU [barcode WU0059392]!; isolectotype: A [barcode 00026480]!).
≡ *Pyrus salwinensis* (Hand.-Mazz.) M.F.Fay & Christenh., Global Fl. 4: 120. 2018. Type: Based on *Eriobotrya salwinensis*.

Distribution. China (NE Yunnan and Tibet), India, and Myanmar.

37. *Rhaphiolepis seguinii* (H.Lév.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 11. 2020.
Chinese name: 小叶枇杷

≡ *Symplocos seguinii* H.Lév., Repert. Spec. Nov. Regni Veg. 10: 431. 1912. Type: China. Kouy-Tchéou (Guizhou): Environs de Ou-La-Gay et de Hoang-Ko-Chou, Mars 1899, *J. Séguin & R.P. Bodinier 2617* (lectotype, selected by Vidal 1965, pg. 575, first step "type"; second step, designated by Liu et al. 2020c, pg. 114: E [barcode E00011359]!; isolectotypes: P [barcode P02143232, P02143233]!).
≡ *Eriobotrya seguinii* (H.Lév.) Cardot ex Guillaumin, Bull. Soc. Bot. France 71: 287, in obs. 1924. Type: Based on *Symplocos seguinii*.

= *Eriobotrya pseudorhaphiolepis* Cardot, Notul. Syst. (Paris) 3: 371. 1918. nom. nov. superfl. Type: Based on *Symplocos seguinii* (Referring to the note Liu et al. 2020c, pg. 114).

Distribution. China (SW Guizhou and SE Yunnan).

38. *Rhaphiolepis serrata* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.

Chinese name: 齿叶枇杷

≡ *Eriobotrya serrata* J.E.Vidal, Adansonia sér. 2, 5: 558. 1965. Type: Laos. Xièng Khouang: Ban Na Poun, 1200 m, en fleurs, 19 November 1920, *E. Poilane 2345* (lectotype, designated by Liu et al. 2020c, pg. 111: P [barcode P02143235]!; isolectotypes: A [barcode 00026486]!, L [barcode L0019415]!, P [barcode P02143236, P02143237]!).

≡ *Pyrus serrata* (J.E.Vidal) M.F.Fay & Christenh., Global Fl. 4: 121. 2018. Type: Based on *Eriobotrya serrata*.

Distribution. China (Guangxi and Yunnan) and Laos (Xièng Khouang).

39. *Rhaphiolepis stipularis* (Craib) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.

Chinese name: 泰国枇杷

≡ *Eriobotrya stipularis* Craib, Bull. Misc. Inform. Kew 1929(4): 109. 1929. Type: Thailand [Siam]: Satul, Adang, 1500 m, on rocky ridge, 16 January 1928, *A.F.G. Kerr 14125* (lectotype, designated by Liu et al. 2020c, pg. 111: K [barcode K000758408]!; isolectotypes: ABD, BK [barcode BK257292]!, BM, K [barcode K000758408]!, TCD [barcode TCD0016606]!).

≡ *Pyrus stipularis* (Craib) M.F.Fay & Christenh., Global Fl. 4: 122. 2018. Type: Based on *Eriobotrya stipularis*.

Distribution. Cambodia and Thailand (Satun).

40. *Rhaphiolepis tengyuehensis* (W.W.Sm.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.

Chinese name: 腾越枇杷

≡ *Eriobotrya tengyuehensis* W.W.Sm., Notes Roy. Bot. Gard. Edinburgh 10: 30. 1917. Type: China. Yunnan: Shweli-Salween divide, Lat. 25°5'N, alt. 7000 ft., tree of

40–60 ft., flowers creamy-yellow, open forests, May 1913, *G. Forest 9857* (lectotype, designated by Vidal 1965, pg. 571: E [barcode E00011333]!).

≡ *Pyrus tengyuehensis* (W.W.Sm.) M.F.Fay & Christenh., Global Fl. 4: 123. 2018. Type: Based on *Eriobotrya tengyuehensis*.

Distribution. China (NW Yunnan and Tibet) and Myanmar (Kachin).

41. *Rhaphiolepis umbellata* (Thunb.) Makino, Bot. Mag. (Tokyo) 16: 13. 1902.
Chinese name: 厚叶石斑木

≡ *Laurus umbellata* Thunb., Fl. Jap. (Thunberg) 175. 1784. Type: Japan. *Thunberg s.n.* (holotype: UPS-THUNB accession no. 9844).

≡ *Rhaphiolepis umbellata* C.K.Schneid., Ill. Handb. Laubholzk. i. 705. 1906. Type: Based on *Laurus umbellata*.

≡ *Rhaphiolepis indica* (L.) Lindl. subsp. *umbellata* (Thunb.) Hatus. 1970. Type: Based on *Laurus umbellata*.

≡ *Rhaphiolepis indica* (L.) Lindl. f. *umbellata* (Thunb.) Hatus., J. Geobot. 25(4): 126. 1978. Type: Based on *Laurus umbellata*.

≡ *Rhaphiolepis indica* (L.) Lindl. var. *umbellata* (Thunb.) H.Ohashi, J. Jap. Bot. 63(1): 4. 1988, pro parte. Type: Based on *Laurus umbellata*.

41a. *Rhaphiolepis umbellata* var. *umbellata*
Chinese name: 厚叶石斑木(原变种)

= *Mespilus sieboldii* Blume, Bijdr. Fl. Ned. Ind. 17: 1102. 1826. Type: not designated.

≡ *Photinia sieboldii* (Blume) G.Don, Gen. Hist. 2: 602. 1832. Type: Based on *Mespilus sieboldii*.

≡ *Rhaphiolepis sieboldii* (Blume) Hassk., Flora 25(2): 47. 1842. Type: Based on *Mespilus sieboldii*.

= *Rhaphiolepis japonica* Siebold & Zucc., Fl. Jap. (Siebold) 1: 162. 1841. Type: not designated.

≡ *Opa japonica* (Siebold & Zucc.) Seem., J. Bot. 1: 281. 1863. Type: Based on *Rhaphiolepis japonica*.

= *Rhaphiolepis ovata* Briot, Rev. Hort. [Paris]. 348. 1870–1871. Type: not designated.

≡ *Rhaphiolepis umbellata* (Thunb.) Makino f. *ovata* (Briot) C.K. Schneid., Ill. Handb. Laubholzk.1: 706. 1906. Type: Based on *Rhaphiolepis ovata*.

≡ *Rhaphiolepis mertensii* Siebold & Zucc. var. *ovata* (Briot) Nakai, Fl. Sylv. Kor. 6: 32. 1916. Type: Based on *Rhaphiolepis ovata*.

Distribution. China (Taiwan and Zhejiang), Korea, and Japan.

41b. *Rhaphiolepis umbellata* (Thunb.) Makino var. *liukiuensis* Koidz., J. Coll. Sci. Imp. Univ. Tokyo 34(2): 73. 1913.
Chinese name: 琉球厚叶石斑木

≡ *Rhaphiolepis indica* (L.) Lindl. subsp. *umbellata* (Thunb.) Hatus. var. *liukiuensis* Koidz., J. Coll. Sci. Imp. Univ. Tokyo 34 (2): 73. 1913. Type: South Korea. Jeju Island: "Quelpaert: in rupibus littoris", May 1907, *U. Faurie 1562* (**lectotype,** selected by Nakai 1924, pg. 64, first step "type"; **second step, designated here**: P [barcode P02143131]!; isolectotypes: A [barcode 00032546]!, B [barcode B 10 0278052]!). [Note Q]
≡ *Rhaphiolepis liukiuensis* (Koidz.) Nakai, J. Arnold Arbor. 5: 63. 1924. Type: Based on *Rhaphiolepis indica* subsp. *umbellata* var. *liukiuensis*.
≡ *Rhaphiolepis umbellata* (Thunb.) Makino subsp. *liukiuensis* (Koidz.) Masam. & Yanagih., Trans. Nat. Hist. Soc. Formosa XXXI: 274. 1941. Type: Based on *Rhaphiolepis indica* subsp. *umbellata* var. *liukiuensis*.
≡ *Rhaphiolepis indica* (L.) Lindl. var. *liukiuensis* (Koidz.) Kitam., Acta Phytotax. Geobot. 26(1–2): 2. 1974. Type: Based on *Rhaphiolepis indica* subsp. *umbellata* var. *liukiuensis*.

Distribution. China (Taiwan), Japan (Kyushu and Ryukyu), and Korea (Jeju Island).
Note Q. Koidzumi (1913) described *Rhaphiolepis umbellata* var. *liukiuensis* and did not mention any type material except the locality "Liukiu: Okinawasima; Korea: Quelpaert". Nakai designated the collection *U. Faurie 1562* as type, however, it should be lectotype [first-step] according to Art. 9.17 (Turland et al. 2018). This designation of the lectotype is found to refer to three sheets in herbaria A, B, and P, and needs to be further narrowed to a single one of these specimens by way of a subsequent lectotypification [second-step].

42. *Rhaphiolepis wardii* (C.E.C.Fisch.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.
Chinese name: 缅甸枇杷

≡ *Eriobotrya wardii* C.E.C.Fisch., Bull. Misc. Inform. Kew 1929(6): 205. 1929. Type: Myanmar. Namkiu Mountains. Valley of the Sheinghku, 6000–7000 ft., in flower in October, *F. Kingdon-Ward 7618* (holotype: K [barcode K000758392]!; isotype: A [barcode 00026488]! image of the holotype with a small fragment of inflorescence).
≡ *Pyrus alabaster* M.F.Fay & Christenh., Global Fl. 4: 94. Feb. 2018. Type: Based on *Eriobotrya wardii*.
≡ *Pleiosorbus wardii* (C.E.C.Fisch.) Rushforth, Phytologia 100(4): 233. 21 Dec. 2018. Type: Based on *Eriobotrya wardii*.

Distribution. Myanmar (Kachin and North Triangle).

43. *Rhaphiolepis williamtelliana* (M.F.Fay & Christenh.) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.
Chinese name: 香花枇杷

≡ *Eriobotrya fragrans* Champ., Hooker's J. Bot. Kew Gard. Misc. 4: 80. 1852. Type: China. Hong Kong: Mt. Victoria, *J.G. Champion s.n.* (lectotype, designated by Vidal 1965, pg. 557: K [barcode K000758384]! "type").
≡ *Pyrus williamtelliana* M.F.Fay & Christenh., Global Fl. 4: 126. 2018. Type: Based on *Eriobotrya fragrans*.

43a. *Rhaphiolepis williamtelliana* var. *williamtelliana*
Chinese name: 香花枇杷(原变种)

Distribution. China (Guangdong, Guangxi, Hainan, Hongkong, and Tibet) and Vietnam.

43b. *Rhaphiolepis williamtelliana* (M.F.Fay & Christenh.) B.B.Liu & J.Wen var. *furfuracea* (J.E.Vidal) B.B.Liu & J.Wen, Front. Plant Sci. 10-1731: 12. 2020.
Chinese name: 粉叶香花枇杷

≡ *Eriobotrya fragrans* Champ. ex Benth. var. *furfuracea* J.E.Vidal, Adansonia sér. 2, 5: 557. 1965. Type: Vietnam (Sud-Annam). Nha Trang: Massif du Hon Ba, 1000–1500 m, en fleurs, 5 September 1918, *A. Chevalier 38893* (lectotype, designated by Liu et al. 2020c, pg. 106: P [barcode P02143263]!; isolectotypes: A [barcode 00026481]!, C [barcode C10017884]!, K [barcode K000758407]!, L [barcode L0019413]!, P [barcode P02143264, P02143265, P02143266]!).

Distribution. Vietnam (Nha Trang).

44. *Rhaphiolepis wuzhishanensis* W.B.Liao, R.H.Miao & Q.Fan, Novon 17(4): 429 (-431, fig. 1). 2007.
Chinese name: 五指山石斑木

Type. China. Hainan: Mt. Wuzhishan, 1830 m, 5 August 2005, *Q. Fan 6087* (holotype: SYS; isotype: MO).

Distribution. China (Hainan).

45. *Rhaphiolepis yui* B.B.Liu & J.Wen, nom. nov. [Note R]
urn:lsid:ipni.org:names:77210703-1
Chinese name: 广西枇杷

≡ *Eriobotrya kwangsiensis* Chun ex X.H.Yang & S.Q.Lin, Acta Hortic. 750: 221. 2007. Type: China. Guangxi: Xiangzhou County, Shangguchen, Wuzhishan, 18 June 1936, *C. Wang 39423* (holotype: IBK [barcode IBK00061038, herbarium accession number 35925]!; isotypes: PE [barcode 00799311]!, SZ [barcode 00194327]). [Note S]

Distribution. China (Guangxi).

Note R. The species epithet "kwangsiensis" has been pre-occupied by *Rhaphiolepis kwangsiensis* Hu, J. Arnold Arbor. 13: 335. 1932, thus a new name is needed for this taxon (Turland et al. 2018). The epithet is given in honor of the late Prof. Te-Tsun Yu (PE) for his great contributions to the taxonomy of Rosaceae.

Note S. Yang and Lin (2007) provided the following type information in the protologue, "Guangxi: Shangguchen. 1936. 6. *C. Wang 35925* (Holotypus, TBK)". According to the image of holotype provided in the protologue, the holotype is *C. Wang 39423*, which was deposited in the herbarium IBK rather than TBK (Fig. 2). The number "35925" cited in Yang and Lin (2007) was the herbarium accession number of the holotype.

Artificial hybrid species:

***Rhaphiolepis* × *delacourii* André, Rev. Hort. [Paris]. 72: 698. 1900.**

≡ *Pyrus* × *delacourii* (André) M.F.Fay & Christenh., Global Fl. 4: 101. 2018. Type: France. Golfe-Juan, May 1900, *s.coll. s.n.* (holotype: K [barcode K000758248]!). [Note T]

Note T. This hybrid species was produced by M. Delacour, a gardener of the Villa Allerton, in Cannes, and it was hybridized between *Rhaphiolepis indica* and *R. ovata* (= *R. umbellata*).

Doubtful names associated with *Rhaphiolepis*:

Photinia luzonensis Merr. var. *acuminatissima* Merr., nom. nud.
Rhaphiolepis crassifolia Hort. ex Voll & Brade, Rodriguésia i. No. 3, 61. 1935, nom. nud.
Rhaphiolepis hiiranensis Kaneh., Formosan Trees, ed. rev. 276. 1936, anglice et japonice.
≡ *Rhaphiolepis indica* (L.) Lindl. var. *hiiranensis* (Kaneh.) H.L.Li, Lloydia 4: 235.

Figure 2. Holotype of *Rhaphiolepis yui* (IBK [barcode IBK00061038]).

1952. ≡ *Rhaphiolepis umbellata* (Thunb.) Makino var. *hiiranensis* (Kaneh.) Hatus., Fl. Ryukyus 312. 1971. nom. nud.

Rhaphiolepis indica (L.) Lindl. var. *insularis* Hatus., Fl. Ryukyus 844. 1971. nom. illeg. & nom. nud.

Rhaphiolepis laevis Lodd. ex G.Don, Hort. Brit. [Loudon] 202. 1830, "*Raphiolepis*". nom. nud.

Rhaphiolepis latifolia Lodd. ex G.Don, Hort. Brit. [Loudon] 202. 1830, "*Raphiolepis*". nom. nud.

Rhaphiolepis pheostemonia St.-Lag., Ann. Soc. Bot. Lyon vii. 133. 1880. nom. nud.

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